

REMARKS

This is an amendment under 37 CFR §1.116. The remarks herein, to the extent they were not presented earlier, are now presented because they are necessitated by the arguments made by the Examiner in the last office action. Since this amendment is being filed within two months of the mailing date of the final rejection, the courtesy of an advisory action is respectfully requested. Claims 1-15 and 21-24 are in this application. Claims 2, 9, and 21 have been amended.

Applicant requests that the Examiner initial and return a copy of the 1449 Form filed on February 10, 2004, and received by the PTO on February 13, 2004.

The Examiner objected to claims 2, 7, 9, 14, and 21 because the "top surface of the fourth region" lacks a clear antecedent basis. Applicant believes that the claims have the necessary clarity required by MPEP §2173.05. However, in an effort to further prosecution, applicant has amended claims 2, 9, and 21 to remove any issue regarding antecedent basis. Claims 2 and 9 were also amended to correct inadvertent typographical errors.

The Examiner also objected to claim 21 because "the sidewall of the trench" lacks a clear antecedent basis. However, from what applicant can determine, "the sidewall" has a clear antecedent basis ("a trench having a sidewall"). The Examiner also objected to claim 23, arguing that there is no support for the claim that the second and fourth regions have substantially equal dopant concentrations. However, the second region can be read to be, for example, n+ region 112 shown in applicant's FIG. 1, and the fourth region can be read to be, for example, n+ region 122 shown in applicant's FIG. 1. Thus, from what can be determined, applicant's specification provides the necessary support.

The Examiner rejected claims 1-15 and 21-24 under 35 U.S.C. §102(e) as being anticipated by Yamauchi et al. (U.S. Patent No. 6,836,001 B2). For the reasons set forth below, applicant respectfully traverses this rejection.

AMENDMENT UNDER 37 CFR §1.116,  
EXPEDITED PROCEDURE REQUESTED

Atty. Docket No. 100-23700  
(P05749)

Claim 1 recites:

“a first region of a first conductivity type;  
“a second region of a second conductivity type that lies over the first region;  
“a third region of the first conductivity type that contacts the second region, the third region being spaced apart from the first region; and  
“a fourth region of the second conductivity type that contacts the third region, the fourth region being spaced apart from the second region.”

In rejecting the claims, the Examiner pointed to n+ substrate 1 shown in FIG. 2 of Yamauchi as constituting the first region required by claim 1, and p- region 3 shown in FIG. 2 of Yamauchi as constituting the second region required by claim 1. In addition, the Examiner pointed to n-type region 4 shown in FIG. 2 of Yamauchi as constituting the third region required by claim 1, and n+ region 5 shown in FIG. 2 of Yamauchi as constituting the fourth region required by claim 1.

Applicant notes, however, that claim 1 requires that the second and fourth regions have the same conductivity type, i.e., the second conductivity type. In addition, independent claim 21 also requires that the second and fourth regions have the same conductivity type. As a result, if p- region 3 shown in FIG. 2 of Yamauchi is read to be the second region required by claims 1 and 21, then n+ region 5 can not be read to be the fourth region required by claims 1 and 21 because these regions do not have the same conductivity type.

Thus, since the Yamauchi reference does not teach a fourth region as required by claims 1 and 21, claims 1 and 21 are not anticipated by the Yamauchi reference. In addition, since claims 2-15 depend either directly or indirectly from claim 1, claims 2-15 are not anticipated by the Yamauchi reference for the same reasons as claim 1. Further, since claims 22-24 depend either directly or indirectly from claim 21, claims 22-24 are not anticipated by the Yamauchi reference for the same reasons as claim 21.

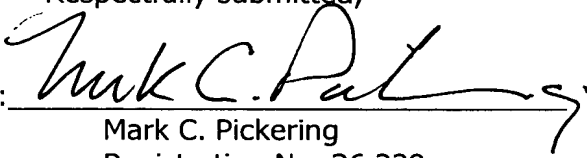
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(The Examiner also pointed to FIGS. 15, 16A-16H, and 20A-20G; and columns 13-16, lines 1-67 of each column, column 19, lines 30-67, and column 20 lines 1-47 of Yamauchi in rejecting claims 1 and 21, but did not appear to discuss these figures any further than the Examiner's and applicant's comments from the previous office action and amendment. As a result, applicant refers the Examiner to applicant's comments in the amendment filed on August 5, 2005 as necessary.)

Thus, for the foregoing reasons, it is submitted that the application is in a condition for allowance. Therefore, the Examiner's early re-examination and reconsideration are respectively requested.

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